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BUREAU OF TOPOGRAPHIC AND GEOLOGICAL SURVEY
George H. Ashley, State Geologist

COAL RESERVES IN WASHINGTON COUNTY, PENNSYLVANIA.

By

John F. Reese

Introduction.

In connection with the "Introduction to the Bituminous Coal Fields of Pennsylvania" now being prepared for publication by the Geological Survey of Pennsylvania, coal reserves of the bituminous fields are being computed by Mr. John F. Reese. In order to render this information available at once without waiting for the uncertain date of printing the report, an abstract of Mr. Reese's figures for Washington County is given herewith. All of the information readily available at this time has been used in the computation, which followed the methods used by the Land Classification Board of the United States Geological Survey in its valuation of the public coal lands. The results are given by beds for each township. For some beds and for some areas the data are abundant and the results entirely reliable. For other beds and areas the data are meager and the results subject to revision as additional data are obtained. All of the data used and the computation sheets are permanently filed so that modifications of the original figures due to the securing of additional data can be made readily.

The figures presented are preliminary and subject to correction for any area when that area shall be studied in detail. In the meantime critical examination of the figures is invited in order that the results may be made as accurate as possible. To that end the Survey will welcome every bit of data not now in its possession. Records of drillings and other data will be kept strictly confidential if so desired, although the Bureau naturally prefers to be able to use data freely.

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George H. Ashley.

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COAL BEDS..

Washington County has the second largest reserve of coal within the State.

Five beds are considered of economic value, and the quantity of coal in the ground has been calculated for each of these beds.

In order of present importance as shipping coals, they are the Pittsburgh, Redstone, Waynesburg, Washington, and Freeport.

Pittsburgh Coal. The extensive mining and prospecting of this bed, and its outcrop throughout the county, have furnished many measurements of its thickness, thus making possible a reliable computation of quantity. For some localities, particularly the old abandoned workings along Monongahela River and large areas in the northwestern part of the county, no maps or other data are available from which to determine the size of the areas already mined out.

Redstone Coal. This bed is developed locally in three townships within the county, namely Union, Carroll, and Fallowfield. Measurements on the outcrop and in mine workings furnish the only data available for computing the quantity. It has been assumed that the bed is continuous within these townships and an average thickness of 3 feet has been used in the calculations. This coal is mined on a very small scale for shipment and for local use.

Waynesburg Coal. The extensive outcrop of this bed throughout the county has furnished many measurements of its thickness, thus making possible a fairly reliable computation of quantity. This bed is broken by many partings, is extremely variable in its section, and in many localities is under shallow cover. For these reasons it cannot be considered as a good reserve for future commercial use, and in computing the quantity of coal only a low percentage of the bed has been figured as mineable. The coal is mined for local use only.

Washington Coal. Measurements on the outcrop of this coal bed have been obtained in sufficient number to make a fairly reliable computation of the tonnage. Like the Waynesburg coal, this bed is broken by many partings, is variable in section, and in places is under shallow cover. It is extremely dirty and in many places is represented by carbonaceous shale. For these reasons in computing the quantity of coal only a small percentage has been considered recoverable. The Washington coal is mined for local use only and cannot be considered as a good source of future supply.

Freeport Coal. Records of drill holes along Monongahela River furnish the only reliable data on the thickness of this bed. Churn drill records show coal at its horizon throughout the southeastern and central part of the county. It is assumed that this coal underlies the entire county. A thickness of 42 inches has been assumed in the townships along Monongahela River. The county has been divided into several northeast-southwest belts and an arbitrary thickness for

the Freeport coal assigned in each zone. The assigned thickness was regularly decreased westward to a minimum of 24 inches in the north-west part of the county. The quantity recoverable has been estimated as 50 per cent of the whole, from which has been deducted 15 per cent for loss in mining.

Because of the irregularity and many partings of the Redstone, Waynesburg, and Washington coals, it is believed that the Freeport bed will yield a larger output than any of these others when the Pittsburgh bed has been exhausted and necessity demands the development of deep-lying beds.

The accessibility of the Redstone, Waynesburg, and Washington coals for local use makes them more important than the Freeport coal at the present time but if assumptions as to unbroken continuity of this bed throughout the county are correct, the Freeport coal can be considered as second in importance for future commercial use.

Other coals are mined for local use, but as they are very small beds and little is known of their extent and thickness, they are not included in the computation of reserves.

Method of Computing Reserves.

The following method was used in computing the coal reserves:

A base map for each coal bed was made by tracing its outcrop from the quadrangle maps made by the U. S. Geological Survey. All available measurements of a coal bed, gathered from Federal and State reports, mine maps, core drill records and personal inspections, were plotted on the map of that coal bed at the locality represented. By studying the distribution of the figures, areas of equal thickness were plotted, and by means of a planimeter, an instrument for measuring plane areas, the area of each coal bed in each township was measured. For calculating the quantity of coal in any area 90,000 short tons per inch per square mile was used.

Areas from which coal has been removed were determined from mine maps and plotted to scale on the base maps. The same method as above was used for computing the quantity of coal extracted.

Having calculated the quantity of coal originally contained within the area of any bed and subtracted the quantity already mined out, the writer determined from engineering experience the probable percentage of each bed which could be recovered in different localities. This varies from 10 to 100 per cent, depending on the thickness and character of the bed. The quantity of coal computed to be in any bed, multiplied by the assumed percentage of recovery, less 15 per cent for loss in mining, gives the estimated recoverable tonnage.

Coal Reserves.

The result of computing the coal reserves in Washington County based on the latest maps, engineering data, and methods is shown in the following tables:

Summary of Recoverable Coal in Washington County, in short tons

Township	Pittsburgh	Redstone	Waynesburg	Washington	Freeport	Total
Allen	2,382,000	180,000	3,000,000	5,562	406,367	5,562
Arwell	2,083,670,000	110,000,000	27,000,000	406,367	406,367	406,367
Beallsville	13,782,000	5,000,000	3,000,000	22,142	3,000,000	22,142
Bentleyville	3,276,000	2,000,000	3,000,000	9,266	3,000,000	9,266
Blasine	52,326,000	4,000,000	11,000,000	70,126	11,000,000	70,126
Buffalo	94,000,000	17,000,000	19,000,000	154,000	24,000,000	154,000
Canton	65,580,000	8,900,000	13,000,000	93,480	6,000,000	93,480
Carroll	47,935,000	10,000,000	33,000,000	122,935	12,000,000	122,935
Cecil	86,860,000	12,000,000	25,000,000	124,030	170,000	124,030
Centerville	55,575,000	11,700,000	18,000,000	75,275	5,000,000	75,275
Chartiers	80,290,000	5,000,000	24,000,000	109,320	30,000	109,320
Cross Creek	110,682,000	2,900,000	24,000,000	141,582	4,000,000	141,582
Deemston	56,415,000	12,000,000	16,000,000	84,715	300,000	84,715
Donegal	186,900,000	9,000,000	39,000,000	261,900	27,000,000	261,900
East Bethlehem	328,276,000	2,600,000	8,000,000	338,876	40,000,000	338,876
East Finley	160,700,000	40,000,000	24,000,000	265,700	680,000	265,700
Elco	680,000	29,200,000	4,000,000	1,080	3,500,000	1,080
East Pike Run	29,200,000	14,000,000	3,000,000	55,700	34,000,000	55,700
Fellowfield	81,600,000	34,000,000	37,000,000	166,600	34,000,000	166,600
Hanover	33,300,000	3,000,000	45,000,000	78,300	3,000,000	78,300
Hopewell	89,000,000	8,000,000	19,000,000	123,000	3,000,000	123,000
Independence	98,600,000	3,000,000	24,000,000	128,600	3,000,000	128,600
Jefferson	76,380,000	300,000	23,000,000	99,720	40,000	99,720
Long Branch	2,050,000	300,000	3,000,000	5,350	300,000	5,350
Morris	141,000,000	66,000,000	35,000,000	263,000	21,000,000	263,000
Mt. Pleasant	147,800,000	5,000,000	3,000,000	188,800	5,000,000	188,800
North Franklin	35,400,000	8,000,000	5,000,000	56,400	19,000,000	56,400
North Strabane	122,700,000	19,000,000	5,000,000	179,700	8,000,000	179,700
Nottingham	80,300,000	8,000,000	3,000,000	116,100	9,000,000	116,100
Peters	86,400,000	9,000,000	3,000,000	118,700	2,000,000	118,700
Robinson	13,600,000	20,000,000	20,000,000	33,600	0,000	33,600



Summary of Recoverable Coal in Washington County in short tons - Continued

Township	Pittsburgh	Redstone	Waynesburg	Washington	Freeport	Total
Roscoe	68,000				1,000,000	1,068,000
Smith	82,400,000		1,000,000		32,000,000	115,400,000
Somerset	122,000,000	41,000,000		2,000,000	46,000,000	211,000,000
South Franklin	100,000,000	39,000,000		15,000,000	25,000,000	179,000,000
South Strabane	108,000,000	31,000,000		11,000,000	27,000,000	177,000,000
Speers	660,000				2,000,000	2,660,000
Stockdale	76,000				1,600,000	1,676,000
Twilight	3,600,000				2,000,000	5,600,000
Union	34,400,000	22,000,000	1,000,000		22,000,000	79,400,000
Washington	16,000,000		3,000,000		4,000,000	23,200,000
West Bethlehem	213,000,000		109,000,000	14,000,000	64,000,000	400,000,000
West Finley	166,300,000		44,000,000	9,000,000	46,000,000	265,300,000
West Pike Run	79,000,000		13,000,000	450,000	39,000,000	121,450,000
Total	3,516,860,000	88,000,000	668,380,000	212,540,000	995,900,000	5,481,680,000

Coal Reserves in Washington County, in short tons.

Bed	Original deposit	Mined out	Recoverable
Pittsburgh	5,091,310,000	556,163,000	3,516,860,000
Redstone	158,760,000	600,000	88,000,000
Waynesburg	1,914,084,000	700,000	668,380,000
Washington	972,315,000	300,000	212,540,000
Freeport	2,389,554,000	-----	995,900,000
Total	10,526,023,000	557,763,000	5,481,680,000

The total area of Washington County is 884.6 square miles.

In the large table giving the estimated recoverable tonnage by beds and townships, the figures are recorded as computed to the nearest thousand. It should however be distinctly understood that while the acreage of each of the beds has been accurately computed, the reliability of the average thickness of the coals used in the computation of tonnage decreases for the several beds given from left to right and for the townships from east to west or from northeast to southwest. Thus, while the figures for the Pittsburgh bed are conservative and probably reliable, the figures for the Freeport coal may be much too small or many times too large.

Detailed tables of the coal reserves in each township have been prepared and will appear in printed form in the report now being written on the bituminous coal fields of the State. They can be consulted in the office of the Survey; or figures for a single township will be sent on request.

